IN THE CLAIMS:

Please replace the claims with the claims provided in the listing below wherein status, amendments, additions and cancellations are indicated.

1. (Original) A rolling bearing apparatus, comprising

a rolling element;

a non-rolling element disposed concentrically with said rolling element; and

a rotation detector for outputting an input exciting voltage by converting it to an induced voltage according to a relative rolling state of said rolling element and said non-rolling element.

2. (Original) The rolling bearing apparatus according to claim 1, wherein said rotation detector comprises:

a rotor provided in said rolling element;

a stator provided in said non-rolling element; and

an exciting winding and output windings wound to said stator, wherein

said output windings induce a voltage according to a gap permeance between said rotor and said stator in response to said exciting voltage inputted to said exciting winding.

3. (Original) The rolling bearing apparatus according to claim 2, wherein

said stator is formed with a plurality of polar teeth provided in a surface of said non-rolling element which opposes said rolling element in a circumferential direction while said exciting winding and output windings are wound to each polar tooth of said stator, and

said rotor comprises a flat portion formed on a circumference of the surface in said rolling element which opposes said plurality of polar teeth provided in said non-rolling element.

4. (Original) The rolling bearing apparatus according to claim 2, wherein: said rolling element is an inner ring; said rotor is formed by an outer peripheral shoulder of said inner ring; and a flat portion is formed on a circumference of said outer peripheral shoulder.

5. (Original) The rolling bearing apparatus according to claim 2, wherein:

said rolling element is made up of two inner rings disposed adjacent to each other in an axial direction;

said rotor is provided in an outer peripheral surface of areas of said two inner rings, which face each other in the axial direction;

said non-rolling element is an outer ring being disposed concentrically with said two inner rings in an outward-radial direction, while having two raceway

grooves in an inner peripheral surface being separated away from each other in an axial direction by opposing each raceway groove of said two inner rings; and

said stator is provided in a region between both raceway grooves of said outer ring.

6. (Original) The rolling bearing apparatus according to claim 5, wherein: said rotor is fixed by fitting a half-portion of an inner peripheral surface of said rotor in an axial direction into one inner end side in an axial direction of one of said inner rings; and a single bore diameter of other half-portion of in the axial direction is made larger than said half-portion in the axial direction so that said other half-portion becomes non-contact with other inner ring.

7. (Original) The rolling bearing apparatus according to claim 5, wherein said exciting winding and said output windings are lead out from a through-hole provided in an area on a center of a circumference of said outer ring in an axial direction.

8. (Original) The rolling bearing apparatus according to claim 2, wherein said rolling element comprises:

a hub wheel; inner rings fitted in an outer periphery of said hub wheel; and a nut mounted on one end side of said hub wheel in an axial direction for connecting said inner rings to said hub wheel, wherein said nut serves as said rotor.

9. (Currently Amended) The rolling bearing apparatus according to claim 2, wherein

said rolling element comprises: a hub wheel with a flange provided in an outer periphery closer to an end of one spindle in an outward-radial direction while having an outer peripheral surface with a small diameter in an outer peripheral surface on an end of [[said]] vehicle inner side; an inner ring mounted outside the small-diameter outer peripheral surface of said hub wheel; a nut spindle portion formed on the vehicle inner end of said hub wheel; and a nut being helically mounted on said nut spindle portion,

said rotor is formed of said nut;

said non-rolling element is an outer ring disposed on an outer periphery side of said hub wheel;

a cap is mounted in [[an]] a vehicle inner side opening of said outer ring; and

said stator is fixed to an inner periphery of said cap and said stator opposes said nut in a radial direction.

10. (Original) The rolling bearing apparatus according to claim 2, wherein

said rolling element comprises: a hub wheel with a flange provided in an outer periphery closer to an end of one spindle in an outward-radial direction while having outer peripheral surfaces with a large diameter and a small diameter in an outer peripheral surface on an end of said vehicle inner side; and inner rings mounted outside the small-diameter outer peripheral surface of said hub wheel;

said non-rolling element is an outer ring disposed on an outer periphery of said hub wheel;

said stator is mounted in a center region of an inner peripheral surface of said outer ring in an axial direction; and

said rotor is formed by notches provided in a plurality of areas on an circumference of a large-diameter outer peripheral surface with a large diameter of said hub wheel, which opposes said stator in a radial direction.

11. (Original) The rolling bearing apparatus according to claim 2, wherein

said rolling element comprises: a hub wheel with a flange provided in an outer periphery closer to an end of one spindle in an outward-radial direction while having outer peripheral surfaces with a large diameter and a small diameter in an outer peripheral surface on an end of said vehicle inner side and having an inner ring raceway groove in said large-diameter outer peripheral surface; inner rings mounted outside said small-diameter outer peripheral surface of said hub wheel;

said non-rolling element is an outer ring disposed concentrically with said two inner rings in an outward-radial direction while having two raceway grooves in an inner peripheral surface being separated away from each other in an axial direction opposing each raceway groove of said two inner rings;

a vehicle outer-side raceway groove of said outer ring is made to have a larger diameter than that of a vehicle inner-side raceway groove, the inner ring raceway groove of said hub wheel is made to have a larger diameter than that of the raceway groove of said inner ring, and PCD of said vehicle outer side ball group, among two groups of the vehicle inner side and vehicle outer side mounted in between said each raceway groove, is made to have a larger diameter than that of PCD of a vehicle inner side ball group;

said stator is mounted in a canter region of an inner peripheral surface of said outer ring in an axial direction; and

said rotor is formed by notches provided in a plurality of areas on an circumference of an outer peripheral surface region in an outer peripheral surface of said hub wheel, which opposes said stator in a radial direction.

12. (Original) The rolling bearing apparatus according to claim 1, further comprising a generator for generating a voltage in accordance with rotation of said rolling element and inputting the voltage as an input exciting voltage to said rotation detector.

13. (Original) The rolling bearing apparatus according to claim 12, wherein said generator comprises: a generating rotor provided in said rolling element by disposing magnetic poles with different polarities alternately in a circumferential direction; and a generating stator provided in said non-rolling element, which has an electric coil opposing the magnetic poles of said generating rotor in an radial direction.

14. (Original) The rolling bearing apparatus according to claim 1, further comprising a radio transmitter for radio-transmitting signals outputted from said rotation detector to a signal processing unit provided outside.

15. (Original) The rolling bearing apparatus according to claim 14, further comprising a generator for generating a voltage in accordance with rotation of said rolling element and inputting the voltage as an input exciting voltage to said rotation detector while supplying it as a driving voltage to said radio transmitter.

16. (Original) The rolling bearing apparatus according to claim 1, further comprising a signal processing unit for processing output signals from said rotation detector.

17. (Original) The rolling bearing apparatus according to claim 12, further comprising a signal processing unit for processing output from said generator.

18. (Original) The rolling bearing apparatus according to claim 14, further comprising a signal processing unit for processing output signals from said radio transmitter.

19. (Original) The rolling bearing apparatus according to claim 1, wherein said rotation detector comprises a rotor provided in said rolling element, a stator provided in said non-rolling element, an exciting winding and output windings wound to said stator, and further comprises a resolver which induces a voltage according to a gap permeance between said rotor and said stator in response to an exciting voltage inputted to said exciting winding from said output windings.